CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 :2005

T-2377

Job No.: CTCE/BBMP/W.No.07/MP/CSR-10/166h/CEMENT/2016-17 Date: 13.10.2016

TEST REPORT ON CEMENT

* CUSTOMER	:	**Asst. Executive Engineer**, Byatarayanapura Sub Division, BBMP, Bangalore.
*AGENCY	:	**Mr. M. Praksh,** No.136, Kashinagara Main Road, Amruthahalli, Bangalore – 92.
*NAME OF THE WORK	:	Improvements to Roads & Drains in Amruthalli Sridhar house cable road in Ward No.07, Byatarayanapura (Change of work Improvements to Roads and Drains in Amruthalli Munianjinappa house to Venkatesh house in Ward No.07, Byatarayanapura), BBMP, Bangalore.
*REFERENCE	:	EE/BTP/BBMP/E-TND/ /2015-16 Dated: 06.04.2015
SAMPLE ID	:	Cement
SAMPLE RECEIVED ON	:	10.10.2016
PERIOD OF TESTING	:	10.10.2016 to 13.10.2016

The results of the tests conducted on the cement sample are as follows:

Sl. No	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 8112-2013
1	Standard Consistency	IS-4031 (Part -4) 1988(RA-2009)	28.50 %	-
2	a) Initial Setting Time	IS-4031 (Part -5) 1988(RA-2009)	145 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part -5) 1988(RA-2009)	490 Minutes	Not More than 600 Minutes
3	Soundness by Le Chartlier Method	IS-4031 (Part-3) 1988(RA-2009)	1 mm	Not more than 10mm

*Information is furnished by the Customer/Representative.

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Job No.: CTCE/BBMP/W.No.07/MP/CSR-10/166h/SAND-Gradation/2016-17 : 13.10.2016

TEST REPORT ON DETERMINATION GRADATION OF FINE AGGREGATES

*** Customer** : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

*** Agency** : **Mr. M. Praksh,**
No.136, Kashinagara Main Road, Amruthahalli, Bangalore – 92.

*** Name of Work** : Improvements to Roads & Drains in Amruthalli Sridhar house cable road in Ward No.07, Byatarayanapura (Change of work Improvements to Roads and Drains in Amruthalli Munianjanappa house to Venkatesh house in Ward no.07, Byatarayanapura), BBMP, Bangalore.

Reference : EE/BTP/BBMP/E-TND/ /2015-16 Dated: 06.04.2015

Technical Reference : IS : 2386 Part 1 - 1963 RA-2007

Sample ID : Fine Aggregates

Sample Received on : 10.10.2016

Date of Testing : 13.10.2016

Total Wt. of Aggregates in gms **1000**

Is Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA- 2007)			
		Zone-I	Zone-II	Zone-III	Zone-IV
10	100	100	100	100	100
4.75	96.10	90-100	90-100	90-100	95-100
2.36	78.60	60-95	75-100	85-100	95-100
1.18	60.10	30-70	55-90	75-100	90-100
600 Micron	27.60	15-34	35-59	60-79	80-100
300 Micron	15.30	5-20	8-30	12-40	15-50
150 Micron	5.80	0-10	0-10	0-10	0-15

* Information is furnished by the Customer/Representative

Remarks : This sample is under Zone-I specific limits.

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Job No.: CTCE/BBMP/W.No.07/MP/CSR-10/166h/AGG/GR/2016-17 : 13.10.2016

TEST REPORT ON DETERMINATION GRADATION OF COARSE AGGREGATES

*** Customer** : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

*** Agency** : **Mr. M. Praksh,**
No.136, Kashinagara Main Road, Amruthahalli, Bangalore – 92.

*** Name of Work** : Improvements to Roads & Drains in Amruthalli Sridhar house cable road in Ward No.07, Byatarayanapura (Change of work Improvements to Roads and Drains in Amruthalli Munianjinappa house to Venkatesh house in Ward no.07, Byatarayanapura), BBMP, Bangalore.

Reference : EE/BTP/BBMP/E-TND/ /2015-16 Dated: 06.04.2015

Technical Reference : IS : 2386 Part 1 -1963 RA-2007

Sample ID : Coarse Aggregates (40mm)

Sample Received on : 10.10.2016

Date of Testing : 13.10.2016

Total Wt. of Aggregates in gms= **5000**

Is Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA- 2007)	
		Graded	Single Sized
80	100	100	-
63	100	-	100
40	96.88	95-100	85-100
20	33.10	30-70	0-20
10	14.04	10-35	0-5
4.75	1.74	0-5	-

A.E.E

* Information is furnished by the Customer/Representative

Remarks : This sample is under Graded specific limits.

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Job No.: CTCE/BBMP/W.No.07/MP/STEEL/2016-17 20.10.2016

TEST REPORT ON REINFORCEMENT STEEL

Customer : **Asst. Executive Engineer**, Byatarayanapura Sub Division, BBMP, Bangalore.

Agency : **Mr. M. Praksh,** No.136, Kashinagara Main Road, Amruthahalli, Bangalore – 92.

Name of the Work : Improvements to Roads & Drains in Amruthalli Sridhar house cable road in Ward No.07, Byatarayanapura (Change of work Improvements to Roads and Drains in Amruthalli Munianjanappa house to Venkatesh house in Ward no.07, Byatarayanapura), BBMP, Bangalore.

Reference : EE/BTP/BBMP/E-TND/ /2015-16 Dated: 06.04.2015

Date of Test : 20.10.2016

Technical Reference : IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm^2	Tensile strength (Ultimate stress) N/mm^2	Elongation percent gauge length		
1	10	0.62	513	556	13.35	O.K	O.K

AE-D.7 A.E.E

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JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.07/MP/STEEL/2016-17 20.10.2016

TEST REPORT ON REINFORCEMENT STEEL

Customer	:	**Asst. Executive Engineer**, Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	:	**Mr. M. Praksh,** No.136, Kashinagara Main Road, Amruthahalli, Bangalore – 92.
Name of the Work	:	Improvements to Roads & Drains in Amruthalli Sridhar house cable road in Ward No.07, Byatarayanapura (Change of work Improvements to Roads and Drains in Amruthalli Munianjanappa house to Venkatesh house in Ward no.07, Byatarayanapura), BBMP, Bangalore.
Reference	:	EE/BTP/BBMP/E-TND/ /2015-16 Dated: 06.04.2015
Date of Test	:	20.10.2016
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm^2	Tensile strength (Ultimate stress) N/mm^2	Elongation percent gauge length		
1	12	0.89	515	558	13.50	O.K	O.K

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Job No.: CTCE/BBMP/W.No.07/MP/CSR-10/166h/CUBE/2016-17 19.11.2016

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

* Customer	: **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
* Agency	: **Mr. M. Praksh,** No.136, Kashinagara Main Road, Amruthahalli, Bangalore – 92.
* Name of the work	: Improvements to Roads & Drains in Amruthalli Sridhar house cable road in Ward No.07, Byatarayanapura (Change of work Improvements to Roads and Drains in Amruthalli Munianjinappa house to Venkatesh house in Ward no.07, Byatarayanapura), BBMP, Bangalore.
* Reference	: EE/BTP/BBMP/E-TND/ /2015-16 Dated: 06.04.2015
* Sample ID	: Culvert Deck Slab Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
* Grade of Concrete	: M_{20}
Compressive Strength as on	: 28th day
Sample Received on	: 19.11.2016

Sl.No.	* Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	22.10.2016	19.11.2016	8.183	476.3	21.17
2	22.10.2016	19.11.2016	8.239	510.4	22.68
3	22.10.2016	19.11.2016	8.315	528.5	23.49

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* Information is furnished by the Customer/Representative

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Job No.: CTCE/BBMP/W.No.07/MP/WMM/Gradation/2016-17 : 14.11.2016

GRADATION FOR WMM
MORTH TABLE-400-11

Customer : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

Agency : **Mr. M. Praksh,**
No.136, Kashinagara Main Road, Amruthahalli, Bangalore – 92.

Name of Work : Improvements to Roads & Drains in Amruthalli Sridhar house cable road in Ward No.07, Byatarayanapura (Change of work Improvements to Roads and Drains in Amruthalli Munianjinappa house to Venkatesh house in Ward no.07, Byatarayanapura), BBMP, Bangalore.

Reference : EE/BTP/BBMP/E-TND/ /2015-16 Dated: 06.04.2015

Date of Testing : 14.11.2016

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **5000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	160	160	3.2	96.8	95-100
22.4	1505	1665	33.3	66.7	60-80
11.2	935	2600	52.0	48.0	40-60
4.75	825	3425	68.5	31.5	25-40
2.36	685	4110	82.2	17.8	15-30
0.600	360	4470	89.4	10.6	8-22
0.075	315	4785	95.7	4.3	0-8

A.E.E.

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Job No.: CTCE/BBMP/W.No.07/MP/WMM/AIV/2016-17 14.11.2016

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Mr. M. Praksh,** No.136, Kashinagara Main Road, Amruthahalli, Bangalore – 92.
Name of the Work	Improvements to Roads & Drains in Amruthalli Sridhar house cable road in Ward No.07, Byatarayanapura (Change of work Improvements to Roads and Drains in Amruthalli Munianjinappa house to Venkatesh house in Ward no.07, Byatarayanapura), BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-TND/ /2015-16 Dated: 06.04.2015
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	14.11.2016

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	389	392	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	78	82	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	311	310	
4	Aggregate Impact value = percent fines	20.05	20.92	
	100* (W_2/W_1)%			**20.48**

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Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.07/MP/WMM/S-T/2016-17

14.11.2016

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Mr. M. Praksh,** No.136, Kashinagara Main Road, Amruthahalli, Bangalore – 92.
Name of Work	Improvements to Roads & Drains in Amruthalli Sridhar house cable road in Ward No.07, Byatarayanapura (Change of work Improvements to Roads and Drains in Amruthalli Munianjinappa house to Venkatesh house in Ward no.07, Byatarayanapura), BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-TND/ /2015-16 Dated: 06.04.2015
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	14.11.2016

Result : Flakiness Index = **11.83%**

Elongation Index = **13.20%**

Result : Combined Flakiness & Elongation index **25.03%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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Job No: CTCE/BBMP/W.No.07/MP/CSR-10/166h/SDBC(QB)/2016-17 21.11.2016

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

*CUSTOMER	:	**Asst. Executive Engineer**, Byatarayanapura Sub Division, BBMP, Bangalore.
*AGENCY	:	**Mr. M. Praksh,** No.136, Kashinagara Main Road, Amruthahalli, Bangalore – 92.
*NAME OF THE WORK	:	Improvements to Roads & Drains in Amruthalli Sridhar house cable road in Ward No.07, Byatarayanapura (Change of work Improvements to Roads and Drains in Amruthalli Munianjinappa house to Venkatesh house in Ward no.07, Byatarayanapura), BBMP, Bangalore.
REFERENCE	:	EE/BTP/BBMP/E-TND/ /2015-16 Dated: 06.04.2015
*SAMPLE ID	:	Bitumen
DATE OF SAMPLING	:	19.11.2016
PERIOD OF TESTING	:	19.11.2016 to 21.11.2016

The results of the tests conducted on the bitumen sample using for Semi Dense Bituminous Concrete.

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 ^{0}C, 1/10 mm	IS :1203 -1978 (RA-2009)	88	80 to 100
2	Softening point, ^{0}C	IS :1205 -1978 (RA-2009)	47	Min. 40
3	Ductility at 27^{0}C, cm	IS :1208 -1978 (RA-2009)	100 >	Min.75
4	Flash Point, ^{0}C	IS :1209 -1978 (RA-2009)	304	Min. 220

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*Information is furnished by the Customer/Representative.

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Job No.: CTCE/BBMP/W.No.07/MP/SDBC/AIV/2016-17 21.11.2016

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Mr. M. Praksh,** No.136, Kashinagara Main Road, Amruthahalli, Bangalore – 92.
Name of the Work	Improvements to Roads & Drains in Amruthalli Sridhar house cable road in Ward No.07, Byatarayanapura (Change of work Improvements to Roads and Drains in Amruthalli Munianjinappa house to Venkatesh house in Ward no.07, Byatarayanapura), BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-TND/ /2015-16 Dated: 06.04.2015
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	21.11.2016

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	378	388	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	80	84	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	298	304	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	21.16	21.65	21.41

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Comments:

Maximum allowable Aggregate Impact value for Semi Dense Bituminous Concrete is 27%

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Job No.: CTCE/BBMP/W.No.07/MP/SDBC/Shape_T/2016-17 21.11.2016

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Mr. M. Praksh,** No.136, Kashinagara Main Road, Amruthahalli, Bangalore – 92.
Name of Work	Improvements to Roads & Drains in Amruthalli Sridhar house cable road in Ward No.07, Byatarayanapura (Change of work Improvements to Roads and Drains in Amruthalli Munianjinappa house to Venkatesh house in Ward no.07, Byatarayanapura), BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-TND/ /2015-16 Dated: 06.04.2015
Technical Reference	IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	21.11.2016

Result : Flakiness Index = **12.32%**

Elongation Index = **13.36%**

Result : Combined Flakiness & Elongation index **25.68%**

Comments:

→ Maximum allowable Flakiness & Elongation Index for Semi Dense Bituminous Concrete is 30%

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Job No.: CTCE/BBMP/W.No.07/MP/SDBC/Stripping/2016-17 23.11.2016

Stripping Value of Road Aggregates (Static Immersion Test)

IS: 6241

Customer	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Mr. M. Praksh,** No.136, Kashinagara Main Road, Amruthahalli, Bangalore – 92.
Name of the work	Improvements to Roads & Drains in Amruthalli Sridhar house cable road in Ward No.07, Byatarayanapura (Change of work Improvements to Roads and Drains in Amruthalli Munianjinappa house to Venkatesh house in Ward No.07, Byatarayanapura), BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-TND/ /2015-16 Dated: 06.04.2015
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	23.11.2016

Type of binder : 80/100
Percentage of binder used : 5.0% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.0 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.6	3.43	96.57
2	3.5		
3	3.2		

AE W-7 A.E.E.

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Comments:

→ Minimum allowable Aggregate retained coating for Semi Dense Bituminous Concrete is 95%

Note:

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Job No.: CTCE/BBMP/W.No.07/MP/SDBC/Sp_Wa/2016-17 23.11.2016

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Customer	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Mr. M. Praksh,** No.136, Kashinagara Main Road, Amruthahalli, Bangalore – 92.
Name of the Work	Improvements to Roads & Drains in Amruthalli Sridhar house cable road in Ward No.07, Byatarayanapura (Change of work Improvements to Roads and Drains in Amruthalli Munianjinappa house to Venkatesh house in Ward No.07, Byatarayanapura), BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-TND/ /2015-16 Dated: 06.04.2015
Type of Mix	Semi Dense Bituminous Concrete
Source / Location	Hotmix Plant, Bangalore
Date of Testing	23.11.2016

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2018	2019	2020	
2	Weight of basket suspended in water	W_2 g	750	750	750	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1268	1269	1270	
4	Weight of saturated surface dry aggregate in air	W_3 g	2025	2026	2027	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	757	757	757	
6	Weight of oven dried aggregate	W_4 g	2010	2015	2012	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.655	2.662	2.658	2.658
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.709	2.701	2.712	2.707
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.75%	0.55%	0.75%	0.68%

AGW-1

A.E.E

Comments:

→ Maximum allowable Aggregate Water absorption value for Semi Dense Bituminous Concrete is 2.0%

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Job No.: CTCE/BBMP/W.No.07/MP/SDBC/Bitumen/2016-17 23.11.2016

BITUMEN DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

AS per IRC : SP : 11 - 1984

CUSTOMER	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
AGENCY	**Mr. M. Praksh,** No.136, Kashinagara Main Road, Amruthahalli, Bangalore – 92.
NAME OF THE WORK	Improvements to Roads & Drains in Amruthalli Sridhar house cable road in Ward No.07, Byatarayanapura (Change of work Improvements to Roads and Drains in Amruthalli Munianjinappa house to Venkatesh house in Ward No.07, Byatarayanapura), BBMP, Bangalore.
REFERENCE	EE/BTP/BBMP/E-TND/ /2015-16 Dated: 06.04.2015
SAMPLE I/D	Roads in Amruthahalli, Ward No.07,
DATE OF TESTING	23.11.2016

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	475	474.5
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	25	25.50
7. Bitumen content in %	5.00	5.10
8. Average	**5.05**	

A.E.E.

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Job No.: CTCE/BBMP/W.No.07/MP/SDBC/Bitumen/2016-17 23.11.2016

GRADATION DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

As per IS : 2386 and IRC : SP : 11 - 1984

CUSTOMER	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
AGENCY	**Mr. M. Praksh,** No.136, Kashinagara Main Road, Amruthahalli, Bangalore – 92.
NAME OF THE WORK	Improvements to Roads & Drains in Amruthalli Sridhar house cable road in Ward No.07, Byatarayanapura (Change of work Improvements to Roads and Drains in Amruthalli Munianjinappa house to Venkatesh house in Ward No.07, Byatarayanapura), BBMP, Bangalore.
REFERENCE	EE/BTP/BBMP/E-TND/ /2015-16 Dated: 06.04.2015
SAMPLE I/D	Roads in Amruthahalli, Ward No.07,
DATE OF TESTING	23.11.2016

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	28.36	5.97	5.97	94.03	90-100
4.75	253.6	53.39	59.36	40.64	35-51
2.36	53.26	11.21	70.57	29.43	24-39
1.18	52.32	11.01	81.59	18.41	15-30
0.3	29.13	6.13	87.72	12.28	9-19
0.075	36.33	7.65	95.37	4.63	3-8

A.E.E.

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	34.15	7.20	7.20	92.80	90-100
4.75	265.3	55.91	63.11	36.89	35-51
2.36	55.98	11.80	74.91	25.09	24-39
1.18	42.23	8.90	83.81	16.19	15-30
0.3	22.36	4.71	88.52	11.48	9-19
0.075	25.56	5.39	93.91	6.09	3-8

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Job No.: CTCE/BBMP/W.No.07/MP/SDBC/AGG/2016-17 23.11.2016

Aggregate Gradation Test

IS : 2386 Part I

Customer	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP,
Agency	**Mr. M. Praksh,** No.136, Kashinagara Main Road, Amruthahalli, Bangalore – 92.
Name of the Work	Improvements to Roads & Drains in Amruthalli Sridhar house cable road in Ward No.07, Byatarayanapura (Change of work Improvements to Roads and Drains in Amruthalli Munianjanappa house to Venkatesh house in Ward No.07, Byatarayanapura), BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-TND/ /2015-16 Dated: 06.04.2015
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete (SDBC)
Date of Testing	23.11.2016

Total Weight of Sample: **5200** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade II MORTH specification
9.5	425	8.2	8.17	91.83	90-100	
4.75	2535	48.8	56.92	43.08	35-51	
2.36	730	14.0	70.96	29.04	24-39	
1.18	435	8.4	79.33	20.67	15-30	
0.3	365	7.0	86.35	13.65	9-19	
0.075	350	6.7	93.08	6.92	3-8	

Total Weight of Sample: **5300** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade II MORTH specification
9.5	365	6.9	6.89	93.11	90-100	
4.75	2985	56.3	63.21	36.79	35-51	
2.36	525	9.9	73.11	26.89	24-39	
1.18	440	8.3	81.42	18.58	15-30	
0.3	325	6.1	87.55	12.45	9-19	
0.075	420	7.9	95.47	4.53	3-8	

A6 W-1 & A.E.E.

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Job No.: CTCE/BBMP/W.No.07/MP/SDBC/Stability/2016-17 23.11.2016

TEST REPORT ON STABILITY OF MIX

Customer	:	**Asst. Executive Engineer**, Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	:	**Mr. M. Praksh,** No.136, Kashinagara Main Road, Amruthahalli, Bangalore – 92.
Name of the Work	:	Improvements to Roads & Drains in Amruthalli Sridhar house cable road in Ward No.07, Byatarayanapura (Change of work Improvements to Roads and Drains in Amruthalli Munianjanappa house to Venkatesh house in Ward No.07, Byatarayanapura), BBMP, Bangalore.
Reference	:	EE/BTP/BBMP/E-TND/ /2015-16 Dated: 06.04.2015
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Semi Dense Bituminous Concrete
Date of Testing	:	23.11.2016

The results of the tests conducted on the bituminous concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-16)
1	Marshal Stability, Kn	8.50	8.95	8.2 Kn (min)
2	Marshal flow, mm	2.50	3.20	2 – 4
3	Percent air voids in Mineral Aggregate	3.05	3.40	3 – 5
4	Voids in Compacted Mix	13.05	13.60	13 – 15
5	Percent Voids filled with Bitumen	67.10	68.35	65 - 78
6	Density, g/cc	2.26	2.27	--

A.E.E.

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